



# **ENERGY STAR® Appliance Program for Manufactured Homes – Program Summary**

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## Summary

This document describes the ENERGY STAR Appliance Program for Manufactured Homes (and its predecessor, the *e*-Rated Appliance Program), launched by the U.S. Department of Energy (DOE) in 1995 to increase the energy efficiency of appliances installed in manufactured homes. The program was conducted in the Pacific Northwest because this region had experienced unusually high rates of participation by manufactured home producers in previous DOE and utility-sponsored energy conservation programs, such as the Super Good Cents Program. DOE's Pacific Northwest National Laboratory (PNNL) conducted the appliance programs with initial participation by the Oregon Office of Energy and later participation from the Idaho Department of Water Resources and Washington State University Energy Program

The programs' approach differed from that of traditional efficiency programs in that, instead of relying on rebate and financial incentives and promoting the appliances solely on the basis of their energy efficiency, the program relied on market forces and promoted other attributes of the appliances such as high-performance, convenience, and comfort. The programs offered manufactured home retailers sales training and marketing and advertising tools. Program staff identified qualifying appliances and negotiated arrangements between appliance suppliers and home manufacturers and retailers, and also intervened when product service or delivery issues arose. Program staff also collaborated with utilities and conducted new appliance demonstrations.

The *e*-Rated appliance program had high efficiency requirements and when the program was introduced in 1995, very few U.S. manufacturers produced appliance models that met the specifications so the program relied on foreign brands unfamiliar to manufactured home retailers. When ENERGY STAR was introduced in 1997 it used slightly less stringent program requirements and by this time several U.S. appliance manufacturers were producing appliance models that met the program specifications so manufactured home retailers were more likely to be able to purchase appliances from their current suppliers.

Program staff learned several lessons from implementing the *e*-Rated and ENERGY STAR appliance programs. These lessons can be applied to other energy-efficiency programs:

- Clearly define the role of the industry partners.
- Articulate how your program enhances your partner's business.
- Understand the market position and corporate strategy of potential partners as it relates to energy efficiency.
- Use an industry champion in as many ways as possible.
- Understand the power of different industry channel members.

- Minimize changes to existing building practices.
- Do not focus solely on energy savings.
- Understand your industry partners' purchasing cycles.
- Consider appliance availability before implementing the program.
- Identify appropriate appliance company liaisons, usually from sales departments.
- Try first to work within the established distribution channels.
- Use proven available products for a large market impact.

Based on these lessons, program staff made the following recommendations:

- In future efforts, program staff should seek early on to gain the support of senior managers at appliance manufacturers and work with them to design and implement new program.
- DOE may want to consider adding appliances and lighting to home energy rating software.
- Site-built homes may be the best market to target for appliance and lighting efficiency programs because buyers of site built home may be more receptive to the higher first cost of these products.

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## 1.0 Introduction

In 1995 the U.S. Department of Energy (DOE) launched a program to increase the energy efficiency of appliances installed in manufactured homes. An ideal testing ground for an effort of this kind could be found in the Pacific Northwest. Here, manufactured home producers, utilities, state energy organizations, and DOE's Pacific Northwest National Laboratory (PNNL) had a long history of operating programs, like the Super Good Cents Program, which resulted in some of the most energy-efficient manufactured homes produced anywhere in the country. Appliance efficiency, however, had not been addressed by existing energy-efficiency programs, and appliances installed in these homes just met minimum efficiency requirements required by law. This paper provides an overview of the ENERGY STAR Appliance Program for Manufactured Homes (and its predecessor, the *e*-Rated Appliance Program), and lessons learned which are applicable to other market transformation programs.

The ENERGY STAR Appliance Program evolved from an earlier program – the *e*-Rated Appliance Program – designed to promote very energy-efficient appliances. Funding for the program was provided by DOE and the program was implemented PNNL and the Oregon Office of Energy.<sup>a</sup> The Idaho Department of Water Resources and Washington State University Energy Program assisted with program implementation in their states once the program was up and running in Oregon. The purpose of this program was to promote the installation of energy and resource-efficient appliances in manufactured homes.<sup>b</sup> The Program targeted manufactured housing for a number of reasons:

- Manufactured homes comprise nearly half of all new housing starts in the Northwest.
- Manufactured homes are built by relatively few companies compared to the site-built industry. Therefore, a large number of homes can be influenced by working with a small number of builders.
- Since 1983 the manufactured housing industry in the Northwest has been involved with DOE and the region's utilities in a number of studies and programs to improve energy efficiency. At the peak of involvement, all of the region's 18 manufactured home builders were participating in the program and every new manufactured home produced in the region was built to strict envelope conservation standards. Although the \$1,500 utility incentive ended in 1995, approximately 60% of all new manufactured homes produced in the Northwest still meet the Super Good Cents standards.

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<sup>a</sup> The Oregon Office of Energy was formerly the Oregon Department of Energy. The organization's name was changed during program implementation.

<sup>b</sup> Manufactured homes are defined as transported structures that are built on a permanent chassis and are regulated by the U.S. Department of Housing and Urban Development (HUD). The HUD code is pre-emptive so HUD-code housing is not subject to local or state building codes (76 FR 13590).

## 2.0 *e*-Rated Appliance Program for Manufactured Homes

The *e*-Rated Appliance Program<sup>a</sup> (ERAP) was established in 1995 DOE's Energy Savers Partnership Program to accelerate the introduction and penetration of energy and resource-efficient appliances into the new home market. The resource-efficient appliances, which were labeled "*e*-rated" under the program, have many benefits for consumers, including energy and water savings, convenience, and high performance. The program's goal was to spur the development and sales of high-efficiency residential appliances, first in the Northwest manufactured housing market and eventually to other geographic areas and housing sectors.

Pacific Northwest National Laboratory and the Oregon Office of Energy designed the program concept in early 1995, and the program was introduced as a pilot in Oregon later that year. The program was later expanded to Washington and Idaho with the assistance of the Washington State University Energy Program and the Idaho Department of Water Resources.

Program staff at the Oregon Office of Energy and PNNL took a novel approach with ERAP's program design, which differed from traditional efficiency programs. The program's success was not dependent upon the use of rebates or financial incentives and did not promote efficient appliances solely on the basis of their energy efficiency. Instead, the program relied on market forces to encourage participation by consumers, home retailers, and appliance manufacturers. The program promoted highly efficient appliances as a package that offered consumers energy savings plus many other attractive attributes. The package concept was expected to help manufactured home dealers sell homes because the *e*-Rated appliances could be used in the sales process as indicators of the overall quality and comfort of the entire home. Also, the program's high-performance specifications were intended to encourage technical innovation by appliance manufacturers.

ERAP involved five basic program components:

- *Sales training tools:* ERAP provided training and materials on ERAP appliance packages to home sales staff - the primary contacts for potential buyers.
- *Marketing and advertising tools:* ERAP staff worked with the industry to develop marketing and advertising programs. Marketing and advertising tools, such as market studies, logos, video clips, and artwork were provided to the industry for their use in advertising campaigns. In addition, an appliance package labeling and certification program was developed to enable home manufacturers to certify to buyers that the appliances sold with a home met the ERAP requirements.
- *Brokering:* ERAP staff negotiated arrangements among program participants to increase the availability and marketability of *e*-Rated appliances. These efforts often involved working

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<sup>a</sup> This program was initially called the Resource Efficient Appliance Program (REAP).

with appliance suppliers to identify qualifying appliances, putting interested manufactured home producers in touch with appliance manufacturer sales representatives, and intervening when product service or delivery issues arose.

- *Collaborating with utilities:* ERAP staff worked with utilities to promote the use of cooperative advertising, promotional events, and financial incentives to promote ERAP appliances.
- *Conducting new appliance demonstrations:* ERAP staff provided results of demonstrations and evaluations of the performance and market acceptance potential for selected appliances. Examples include customer surveys conducted for the ENERGY STAR Retail Program, and focus group results available from Northwest Natural Gas.

Consumers who financed the purchase of their new home had the option of including the *e*-rated appliances in their home finance package, making the appliances much more affordable on a per-month basis. The basic ERAP package included

- *Dishwashers:* An energy-efficient dishwasher with an energy factor of at least 0.56 cycle/kWh or about 20% more energy efficient than the U.S. DOE minimum standard. These dishwashers also used about half as much water as a standard dishwasher and were extremely quiet when operating.
- *Clothes washers:* An energy-efficient tumble action clothes washer with an energy factor greater than 2.5 ft<sup>3</sup>/kWh/cycle and a water factor of no more than 11.0 gallons/ft<sup>3</sup>/cycle. These washers used about half the water and energy of washers that met the minimum U.S. DOE standard.
- *Refrigerators:* A CFC-free refrigerator that is at least 20% more energy-efficient than the USDOE minimum standard. Some beat the USDOE standard by over 40%.

A number of state and industry partners were involved in the design and/or implementation of the *e*-Rated Appliance Program. These partners included:

- the Oregon Office of Energy
- the Washington State University Energy Program
- the Idaho Department of Water Resources
- River City Resource Group
- AKA Advertising
- InterActive Marketing
- Northwest Natural Gas
- Pacific Power
- Silvercrest Homes
- Nashua Homes

- Marlette Homes
- Palm Harbor Homes
- 15 home dealerships.

Participating manufacturers benefited from the following *e*-Rated Program support:

- The initial five manufactured home producers that agreed to participate in the program were provided with a high-efficiency horizontal-axis clothes washer/dryer set produced by Asko. These manufacturers were required to display the appliances for 1 year or replace them.
- Recognition for participation in the program at home shows and dealer events.
- Manufacturer training.
- Dealer training on appliances and the program concept.
- Dealer training guide.

To participate in the *e*-Rated program, manufacturers needed to agree to

- Display *e*-Rated appliances in a model home at the 1995 Manufactured Housing Show in Salem, Oregon.
- After the Salem home show, display appliances in a model home or dealer showroom.
- Display promotional materials about the appliances in the model home.
- Offer *e*-Rated appliances from the factory.

Initially, Oregon Office of Energy worked with individual dealers to offer the appliances in cases where the dealer was unable to order *e*-Rated appliances directly from the factory. However this approach was later discontinued due to poor appliance delivery service and poor overall support from the participating appliance distributor to the dealer.

By 1996, all but one of the manufactured home producers had dropped out of the program. A number of obstacles led to this decline in participation. The primary reasons included

- The appliance distributors participating in the program were not accustomed to supplying the manufactured home industry and did not provide an adequate level of service from the industry's perspective. Many of the American appliance manufacturers and that the manufactured home industry was accustomed to purchasing from did not have appliances that met the energy efficiency specifications so home dealers had to use unfamiliar appliance manufacturers and distributors.

- Most Northwest utilities withdrew promotional support due to industry restructuring so the promotional budget was not sufficient to build awareness among consumers.
- The appliances were comparatively expensive and not selling as quickly as manufactured home producers would have liked.

### **3.0 ENERGY STAR Appliance Program for Manufactured Homes**

In 1997, the *e*-Rated Appliance Program was revamped under the ENERGY STAR™ name. ENERGY STAR is an energy efficiency program run by the U.S. Environmental Protection Agency and DOE which labels energy-efficient models of several types of energy using equipment to help consumers identify resource-efficient products. The appliance program still focused on refrigerators, dishwashers, and clothes washers, and a new category, energy-efficient lighting, was added. The program approach, promoting the full set of attractive attributes these appliances offer as a way of selling an entire home, remained the same.

#### **3.1 ENERGY STAR Program Specifications**

ENERGY STAR efficiency levels, which are slightly less stringent than the *e*-Rated specifications, were adopted. Because the energy efficiency requirements were relaxed and because U.S. manufacturers had since introduced additional models that met the ENERGY STAR specifications, home manufacturers were now often able to obtain ENERGY STAR qualifying appliances from their *current* appliance suppliers. No requirement was made for retailers to stock ENERGY STAR appliances. Table 1 summarizes the energy specifications for the ENERGY STAR Appliance Program.

To participate, manufactured home producers had to agree to offer ENERGY STAR appliances, either as an optional upgrade or as standard appliances, in their homes, and they had to agree to incorporate ENERGY STAR appliance information into their standard product literature.

PNNL's role in the program, on behalf of DOE, was to act as a facilitator between interested parties and to provide support, including promotional and consumer educational materials designed to create consumer awareness. PNNL also worked with the Washington State University Energy Program (WSU) and the Idaho Department of Water Resources (IDWR) – organizations that implement the Super Good Cents (SGC) program with manufactured home producers in Washington and Idaho, to deliver the ENERGY STAR Appliance Program to manufactured homes in the Northwest. As of January 1997, the Oregon Office of Energy no longer participated in the program, and PNNL acted as the program liaison in Oregon.

**Table 3.1.** Energy Specifications for the ENERGY STAR Appliance Program

Appliance	ENERGY STAR Specification	Current DOE Standard
Dishwasher	- energy factor of at least 0.52 cycle/kWh These dishwashers are at least 13% more energy efficient than the U.S. DOE minimum standard and require about half as much water to operate as a typical new dishwasher. They are also extremely quiet.	1994 - energy factor = 0.46 cycles/kWh
Clothes Washers	- energy factor of at least 2.5 ft <sup>3</sup> /kWh/cycle These washers require only about one-half the energy to operate and generally use 17 to 25 gallons of water per load compared to 38 to 50 gallons of water consumed by a typical new washing machine.	1994 - 1.18ft <sup>3</sup> /kWh/cycle
Refrigerators	- at least 20% more efficient than the U.S. DOE standard One model exceeds the standard by over 40%.	1993 - varies by size and model, see 10 CFR 430.32

## 3.2 Home Manufacturer Participation

PNNL and other ENERGY STAR staff arranged several meetings and visits with Northwest manufactured home producers to promote program participation. At the time of the transition from *e*-Rated to ENERGY STAR, only one manufactured home producer, Silvercrest Homes, was actively selling *e*-Rated appliances. In March 1997, Fleetwood Homes of Washington agreed to participate in the program and began offering ENERGY STAR appliances in mid-1997. Additional manufacturers expressed an interest, but ultimately decided against it.

### Silvercrest Homes

When the transition to ENERGY STAR occurred, Silvercrest chose to continue to use the *e*-Rated name and logo instead of switching to ENERGY STAR. Silvercrest offered ENERGY STAR dishwasher and clothes washer built by Asko. One Silvercrest dealer in Eugene, Oregon, sold

the majority of the *e*-Rated appliances. Silvercrest continued to offer ENERGY STAR appliances into 1998, mainly through their Eugene, Oregon, retailer, but sold very few units.

### **Fleetwood of Washington**

In March 1997, after lengthy discussions with Washington State University (WSU) Energy Program staff, Fleetwood of Washington decided to offer an ENERGY STAR clothes washer, dishwasher, and refrigerator through its dealerships across the Northwest. Fleetwood included information on the ENERGY STAR appliance package in its product catalog to retailers, and individual retailers could choose to offer these appliances to customers.

During 1997 and 1998, PNNL, WSU, and IDWR visited Fleetwood of Washington retailers and provided training and delivered brochures on ENERGY STAR appliances. Dealers with a high portion of SGC homes were targeted for training since these retailers were the most likely to embrace the idea of selling ENERGY STAR appliances. At the end of 1997, few ENERGY STAR appliance packages were sold by Fleetwood of Washington dealers.

Fleetwood of Washington made a strong commitment to support of the ENERGY STAR Appliance Program for Manufactured Homes. Fleetwood of Washington, Maytag, and WSU Energy Program staff worked closely together to identify an appropriate package of appliances for the plant. This package contained

- Maytag 24 cubic foot refrigerator (MTB2446B) with deluxe see-through shelves
- Maytag dishwasher (MDB6000) with microchip-driven (fuzzy logic) wash system
- Maytag Neptune Laundry package.

Fleetwood priced the ENERGY STAR appliances separately instead of selling them together as a package. The consumer would be charged \$3,430 for the all of the appliances, or the following for each:

- \$1,450 - ENERGY STAR refrigerator upgrade from a 14-cubic-foot model.
- \$680 – ENERGY STAR dishwasher upgrade from NO dishwasher
- \$1,900 – ENERGY STAR Neptune laundry

The \$3,400 price tag for the ENERGY STAR appliances was quite steep for the typical manufactured home consumer. In addition, the 24-cubic-foot refrigerator was larger than many families needed, but a smaller ENERGY STAR refrigerator was not available. Also, during the time of the program, Fleetwood was offering a much more affordable appliance upgrade for \$1,400. This upgrade included a Maytag dishwasher, refrigerator, and washer/dryer. Although

these appliances did not contain the special features or energy-efficiency benefits of the ENERGY STAR appliances, they were much more affordable and dealers found them easy to sell.

### **Marlette Homes**

Marlette Homes was an early participant in the *e*-Rated appliance program; however, they discontinued their involvement in the program in 1995 after facing service problems with their appliance distributor. However in March 1998, after the Salem Manufactured Home Show, Marlette management expressed interest in the ENERGY STAR Appliance Program.

PNNL staff met with Marlette management and the national accounts representative of GE Appliance Company and Marlette management agreed on an ENERGY STAR appliance package. Consumer brochures were developed for Marlette retailers to help promote the appliances, and brochures on the appliance package were distributed at manufactured home shows during 1998. However Marlette did not conduct recommended follow-on activities and, to our knowledge, Marlette did not sell any ENERGY STAR appliances.

### **Nashua Homes**

Nashua Homes agreed to participate in the *e*-Rated Appliance Program in 1996; however, they found the ENERGY STAR appliance distributor (not their traditional supplier) to be unresponsive to their service requests. Since there were essentially no other appliance options, they decided not to offer the appliances.

In 1997, we were able to renew Nashua's interest in the program after ENERGY STAR specifications were adopted, which allowed Nashua to buy ENERGY STAR appliances from their current appliance supplier, GE. The GE appliance representative, PNNL, and IDWR met with Nashua Homes staff regarding the program; however, Nashua decided not to pursue involvement in the program.

### **Redman Homes**

In 1998, Redman Homes were equipped with Frigidaire appliances, and *all* Frigidaire dishwasher options qualified under ENERGY STAR's dishwasher specifications. Redman plant management worked with PNNL to establish a system for labeling ENERGY STAR dishwashers in model homes. Unfortunately Frigidaire did not produce a qualifying refrigerator. The plant also was not interested in the Frigidaire clothes washer, primarily due to price. Management at the plant thought that with mark ups, the clothes washer would be too expensive for their customers.

## 4.0 Lessons Learned and Implications for Other Programs

Over the course of this program, valuable lessons were learned about introducing an energy-efficient appliance program, and working with the manufactured home industry. This section highlights these lessons and their implications for other energy-efficiency programs.

**Clearly define the role of the industry partners.** In addition to defining what the program offers, you must clearly define the industry partner's role. In our program, manufactured home producers were required to make ENERGY STAR appliances available from the factory, provide retailers with pricing information, and include ENERGY STAR products in standard product literature. It is a good idea to agree to these terms in writing. For example, with ENERGY STAR, a memorandum of understanding was developed that program partners were encouraged, though not required, to sign to formalize the partnership between the partner and PNNL/DOE.

**Articulate how your program enhances your partner's business.** Businesses are, of course, interested in increasing their sales and improving their bottom line. Participation in the ENERGY STAR appliance program helped manufactured home producers and retailers differentiate their homes from the competition since not all producers offer high-performance appliances. Promotional events created visibility for retailers and encouraged potential customers to visit the showroom, and the association with earth-friendly, energy-efficient home components could help improve a company's overall image as a good corporate citizen.

**Understand the market position and corporate strategy of potential partners as it relates to energy efficiency.** Some companies position themselves as efficiency leaders while others focus on minimum requirements and low initial cost. Understanding a company's market position can help you determine whether or not it is a likely program partner. Because some companies are better candidates than others, your understanding will help target resources on those companies that have the most likelihood of participating. Corporate strategies that stress environmental friendliness are also consistent with an energy-efficiency message.

**Use an industry champion in as many ways as possible.** Successful implementation of voluntary energy-efficiency programs often can be attributed to the involvement of an industry person who was willing to champion the project at their company. It takes time and effort to put a project in place and if you cannot get the attention of at least one person at an organization, success is unlikely.

**Understand the power of different industry channel members.** In addition to identifying a champion in industry and the corporate strategy of the various market participants, it is important to recognize the power structure of the industry as some participants have leverage over others. In the manufactured housing industry, large retailers are often very influential in convincing manufactured home builders to offer certain products. As retailers are the closest link to consumers, they are key in convincing manufacturers to offer ENERGY STAR appliances in homes. This is true even in cases where the manufactured home company owns the dealerships.

Because of their proximity to the customer, dealerships usually have considerable voice in product offerings.

**Introducing changes to building practices can be problematic.** Homebuilders are very sensitive to costs; therefore, anything that increases costs is a tough sell. Costs are not limited to the incremental cost of upgrading to a more efficient product. Costs can include additional time required for installation or increased inventory costs. On the other hand, anything that will reduce these costs can be used in getting the homebuilder to make a change to a more efficient product. Also, in the manufactured housing industry, introducing a product that must be installed on site during home setup is a drawback as this can lead to quality control problems.

**Do not focus solely on energy savings.** Remember this is not a good primary argument to use when recruiting industry members; research has shown that low energy consumption is not on the top of the list of attributes consumers are looking for in appliances. Instead, stress how a quiet, energy-efficient dishwasher will reduce noise and improve comfort in an open floor plan. Stress how an energy-efficient, stackable clothes washer will increase usable space in utility rooms. Show how publicity from program participation can boost the company's image.

**Understand purchasing cycles.** Manufactured home corporate contracts for appliances are generally negotiated on a yearly basis. This schedule has a number of program implications. For example, manufacturers may be legally obligated to purchase from an exclusive supplier over the duration of the contract. Also, prices on ENERGY STAR products from the appliance manufacturer are generally lower if they are negotiated as part of the homebuilder's national contract. Therefore, timing is important. Don't miss out on the opportunity to help influence which products are included in a homebuilder's yearly appliance contract. Also coordinate with other programs to take advantage of other large volume purchases of energy-efficient products.

**Appliance availability is a key consideration.** During 1996, PNNL completed a baseline analysis of the energy-efficiency levels of appliances installed in Northwest manufactured homes from 1988–1994. At that time, GE/Hotpoint and Magic Chef dominated the market for appliances (dishwashers, refrigerators, oven/ranges) installed in manufactured homes, with 45% and 46% of the market respectively. Frigidaire held 9% market share at that time. None of these U.S. appliance manufacturers produced a full line of e-Rated appliances to offer manufactured home producers, which limited our ability to gain their participation in the program.

**By 1998 Maytag had captured a portion of the Northwest manufactured home appliance market by supplying the Fleetwood of Washington plant.** U.S. appliance manufacturers had introduced additional qualifying energy-efficient appliances for the program, and more appliances qualified once the less stringent ENERGY STAR were adopted. Maytag and GE each produced ENERGY STAR dishwashers, clothes washers, and refrigerators. However Frigidaire did not produce an ENERGY STAR refrigerator, which limited our ability to gain the support of manufactured home plants supplied by Frigidaire.

**Identify appropriate appliance company liaisons, usually from Sales departments.**

Appliance manufacturers often have sales departments dedicated to supporting the manufactured home market. These customers buy large volumes of appliances and represent a unique market for appliance makers. Appliance manufacturers typically produce appliance models – generally lower-end, low-cost models sometimes referred to as "builder specials" – specifically for this market. Upgrades were available, but most had limited features. In the early stages of program implementation we pursued the cooperation of staff from “government relations” positions in appliance organizations and found that, while interested in what we were doing, they exerted little influence over supply decisions. The important thing to remember is that ENERGY STAR appliances are not typically offered to this market, so identifying the appropriate staff and working with them to make ENERGY STAR appliances available is key.

**Try first to work within the established distribution channel.** Since manufactured home producers generally do not like to add or switch appliance suppliers, getting a commitment from appliance manufacturers to offer ENERGY STAR appliances to their manufactured home producers was very important. The *e*-Rated appliance program faced an especially large hurdle because qualifying appliances were produced primarily by unfamiliar, foreign appliance manufacturers.

**Include program appliances in the yearly sales contract to obtain preferential pricing.**

Pricing of ENERGY STAR appliances influences the manufactured home industry's interest in offering them and consumers' interest in buying them. The manufactured home industry typically enters into supply contracts with appliance manufacturers once per year, and appliances included in these contracts benefit from the best discounts. Therefore it is important to know when these contracts are coming due in order to work with both home manufacturers and appliance suppliers to promote inclusion of ENERGY STAR appliance models in the yearly appliance contract. Maytag and eventually GE were particularly supportive in making ENERGY STAR appliances available direct from the factory to manufactured home producers.

**You need proven, available products for a large market impact.** It is important that a variety of appliances be available from a number of suppliers so that home builders have a choice when selecting energy-efficient products to offer as part of the ENERGY STAR appliance program. Ideally, ENERGY STAR appliances will be available from a manufactured home builder's current supplier because switching or adding suppliers is generally undesirable. Also, it is important that products are proven in the marketplace. When the ENERGY STAR appliance program began, very few domestic appliance manufacturers offered qualified products; most were expensive, unfamiliar foreign brands. The one manufactured home builder that offered ENERGY STAR appliances direct from the factory experienced delivery problems. Another builder who was interested in participating found the appliance supplier to be unreliable and eventually decided against continued participation in the program.

## 5.0 Conclusions and Next Steps

The ENERGY STAR Appliance Program for Manufactured Homes (and its predecessor, the *e*-Rated Appliance Program) tested a new program approach for accelerating the introduction and penetration of energy- and resource-efficient appliances into the new home market. In many ways, the program was "before its time." Throughout much of the Program's life, qualifying energy- and resource-efficient appliances were relatively expensive and produced by foreign manufacturers that were not familiar with serving the manufactured housing market. In the later stages of the program, U.S. manufacturers introduced appliances that qualified as ENERGY STAR-efficient; however, these manufacturers were just getting up to speed on the marketing aspects of ENERGY STAR and were busy determining the level of involvement they wanted to have in the ENERGY STAR Retail Program.

Implementation of this program led to a number of "Lessons Learned" which were outlined in this report. The following are "next steps" that should be considered if DOE or others are interested in pursuing a similar effort in the future.

- Work with senior managers at appliance manufacturers and gain their support in designing and implementing any new program effort. Ideally these manufacturers would offer some kind of an "energy package" that would be offered to their large corporate account customers. For example, Maytag could offer a high efficiency kitchen package that would include an ENERGY STAR dishwasher and refrigerator, as well as a range, oven, and/or microwave that scores on the upper end of the efficiency spectrum of that product category.
- DOE may want to consider adding appliances and lighting to home energy rating software. Although lighting and appliance efficiency is not considered in current performance ratings, it would allow software users to quantify incremental energy use reductions possible by installing energy efficient appliances and lighting. These savings can be substantial. The ability to quantify these savings may prompt builders to install these measures since they could use the savings information to help market efficient homes.
- Although the manufactured home market is an attractive entry market for energy efficiency programs, it may be best to target the site-built market with an appliance and lighting efficiency program because buyers of site-built homes may be more receptive to the incremental first cost of these products. Builders participating in the ENERGY STAR Homes Program would be excellent candidates for such an effort.